UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,929	04/21/2004	Chiranjit Deka	03US7032 (1920-0027)	5105

49133 7590 06/02/2006

MAGINOT, MOORE & BECK, LLP
CHASE TOWER
111 MONUMENT CIRCLE
SUITE 3250
INDIANAPOLIS, IN 46204-5115

EXAMINER	
FASTOVSKY, LEONID M	

ART UNIT	PAPER NUMBER
3742	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/828,929	DEKA ET AL.	
	Examiner	Art Unit	
	Leonid M. Fastovsky	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,15-23,37-46 and 48-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,15-23,37-46 and 48-61* is/are rejected.

7)☒ Claim(s) *62* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-9, 23 and 53-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Karger.

Karger discloses an apparatus 26 for controlling the temperature of one or more substances passing through one microfluidics channel 12, the apparatus comprising a planar shaped heating unit 32 with a Peltier heating effect (col. 9, lines 40-55), the heating unit 32 having a first and a second surfaces, the first surface is at least partially exposed (in a broad possible interpretation meaning) for cooling through a heat dissipating unit 34, even though it positioned against the plate 34 (col. 11, lines 45-65), a thermally conductive medium 28 with a channel 12 disposed in the medium 28, the heat dissipating unit 34 with fins 70 which is inherently a metal layer for being the heat sink and exposed to the ambient temperature for cooling (col. 11, lines 45-65).

As for claims 37 and 39-44, Karger discloses an apparatus 10 for executing a capillary electrophoresis process (col. 5, lines 40-65) comprising a first electrode unit 18 adapted to receive one or more substances for the analysis, a second electrode unit 20, a plurality of capillaries within a capillary tube 12, a detection chamber 13 with a

detection-sensor device 22,24, a temperature control unit comprising a heating unit 32, and the heating unit 32 is used as a thermal controller in response to temperature sensors-thermocouples 50 (col. 10, lines 21-55).

3. Claims 2 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krager in view of Oldenburg.

Krager discloses substantially the claimed invention, but does not disclose a rubber material. Oldenburg discloses a thermal cycling device comprising a lid 10 with a copper layer 14 that transmits heat and includes an inherently thermally conductive silicon rubber 16. It would have been obvious to one having ordinary skill in the art to modify Krager's invention to include a rubber material as taught by Oldenburg in order to better control the temperature of the apparatus.

4. Claims 10, 45 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krager in view of Chow.

Krager discloses substantially the claimed invention, but does not disclose a thin-film heater. Chow discloses a method for monitoring fluid in microfluidic system comprising a heating unit 205 partially exposed for cooling and a thin-film heater 21 (col. 22, lines 1-19). It would have been obvious to one having ordinary skill in the art to modify Krager's invention to include a thin-film heater as taught by Chow as a functional equivalent to the Peltier heater.

5. Claims 11 and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krager in view of Kaltenbach et al.

Krager discloses substantially the claimed invention, but is silent regarding separating parts without damage and a hinge structure. Kaltenbach discloses a fluid analysis system comprising temperature control devices 146, heat exchange modules 148 and substrate 142 having a thermally conductive paste when assembled, therefore capable of being separated without damage and a hinge structure 64 (Fig. 5). It would have been obvious to one having ordinary skill in the art to modify Krager's invention as taught by Kaltenbach to assure that the thermally conductive medium 28 and the heating unit 30 are separated without damage and comprising a hinge-folding structure of a thermal column 28' in order to reduce production costs.

6. Claims 12, 15 and 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krager in view of Kaltenbach and further in view of Moles.

Krager in view of Kaltenbach discloses substantially the claimed invention including separating of the parts without damage, but does not disclose using mechanical fasteners or adhesive. Moles discloses a microfluidic device 10 having an electrostatic membrane 24 bonded within the device by adhesive or assembled in the device by fasteners (col. 3, lines 20-65). It would have been obvious to one having ordinary skill in the art to modify the invention of Karger in view of Kaltenbach to use adhesive or fasteners as taught by Moles as an obvious functional equivalent.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krager in view of Chow and further in view of Kaltenbach.

Krager in view of Chow discloses substantially the claimed invention, but is silent regarding separating parts without damage and a hinge structure. Kaltebach discloses a

fluid analysis system comprising temperature control devices 146, heat exchange modules 148 and substrate 142 having a thermally conductive paste when assembled, therefore capable of being separated without damage and a hinge structure 64 (Fig. 5). It would have been obvious to one having ordinary skill in the art to modify the invention of Krager in view of Chow as taught by Kaltenbach to assure that the thermally conductive medium 28 and the heating unit 30 are separated without damage and comprising a hinge-folding structure of a thermal column 28' in order to reduce production costs.

8. Claims 16 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krager in view of Chow and Kaltenbach and further in view of Oldenburg. Krager in view of Chow and Kaltenbach discloses substantially the claimed invention, but does not disclose a silicone gel material. Oldenburg discloses a thermal cycling device comprising a lid 10 with a copper layer 14 that transmits heat and includes an inherently thermally conductive silicon rubber 16. It would have been obvious to one having ordinary skill in the art to modify the invention of Krager in view of Chow and Kaltenbach to include a silicone material as taught by Oldenburg in order to better control the temperature of the apparatus.

Allowable Subject Matter

9. Claim 62 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments with respect to claims 1-12, 15-23, 37-46 and 48-61 have been considered but are not presuasive.

Krager **does disclose** an apparatus 26 for controlling the temperature of one or more substances passing through one microfluidics channel 12, the apparatus comprising a planar shaped heating unit 32 with a Peltier heating effect (col. 9, lines 40-55), **the heating unit 32 having a first and a second surfaces, the first surface is at least partially exposed (in a broad possible interpretation meaning) for cooling through a heat dissipating unit 34, even though it positioned against the plate 34 (col. 11, lines 45-65**), a thermally conductive medium 28 with a channel 12 disposed in the medium 28, the heat dissipating unit 34 with fins 70 which is inherently a metal layer for being the heat sink and exposed to the ambient temperature for cooling (col. 11, lines 45-65).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid M. Fastovsky whose telephone number is 571-272-4778. The examiner can normally be reached on M-Th. 8.00 am -6.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leonid M Fastovsky
Examiner
Art Unit 3742

lmf

5/12/06

ROBIN EVANS
SUPERVISORY PATENT EXAMINER

5/27/06